1. Introduction

Goal of this Lecture/Note:

1. Understand what the terminal is.
2. Learn some useful commands in Terminal.
3. A basic understanding of Python.
4. If time permits, a basic understanding of what Git is.
5. Use the back half of this lecture to go through the installation guide.

2. Terminal

What is the Terminal?

The terminal is a program that allows you to interact with your computer by entering commands. It is much faster compared to the way with which you normally interact with a computer. If you're on Mac/Linux, you have a program called Terminal and if you are using Windows, you should ideally have PowerShell.

Terminal has a lot of useful commands that you can use to explore the directories (think of them as folders) on your computer.

Some Useful Commands (Show via Demo):

1. **ls** – This command lists all the files and folders in the current directory.
2. **cd** <path to directory> – To change the directory.
    a. **cd..** The .. means the parent directory or one directory above the current directory.
    b. **cd/cd~** If you just type in cd without referencing a directory, you go back to the home directory.
3. **mv ~<source path> ~<destination path>** – Move files from one location to another.
4. **mkdir <directory name>** : Make a new directory with the given name.
5. **rm** – Removes a file
6. **rm -r** – Removes a directory
7. **cat** – Displays the contents inside a file.
8. **Touch –** Creates a file

There are other useful commands that you can explore on your homework!

3. Python

What is Python?

Python is a high-level programming language with human-readable syntax.

a. Popular in research (many libraries).
b. Fast code development

What happens when you run a Python Program?

a. The interpreter interprets and executes the Python code.
b. You can think of the interpreter as translating your Python code into machine code for the computer to run.
c. When you download Python, you're downloading the interpreter.

Text editors and why we need them

The Python interpreter you just installed allows you to run Python code. You will also need a text editor, where you will write Python code. Now while a text editor is simply a computer program and a tool used for editing plain text, an IDE is a full-fledge software environment that consolidates basic developer tools required to build and test software. In short, both of them are used for writing code.

For this class, you will use Jupyter Notebook, but I suggest downloading Visual Studio Code for later use in your research.

More about Python next week!

4. Git and GitHub

Git and GitHub are extremely useful tools for writing and sharing code with your peers. Git is generally a topic that we cover in the second semester, but since you will be downloading your assignments using Git, it is helpful to have some idea of what git is.

What are Version Control Systems?

Version control allows you to view or revert back to previous iterations of files. Some aspects of version control are actually built into commonly used applications. Version control systems can track the history of code revisions.

Is Git a Version Control System?

Yes! Git is a version control system and that means it keeps track of changes to a file over time. Actually, Git is a *distributed* version control system, which means that every developer's computer stores the entire history of the entire project.

5. The Go-Do-Your-Homework-Instead Section

1. *Guido van Rossum named 'Python' while reading the Monty Python's Flying Circus script so that the language sounded 'cool and mysterious.' Python was actually just a 'hobby project' for Guido van Rossum.*
2. *If you type 'import this' into your Python IDLE, you get a poem called 'The Zen of Python' by Tim Peters.*
3. *The name 'git' was given to it by Linus Torvalds who wrote the very first version. He described this version control system as "the stupid content tracker" and named it after a British-English slang for 'unpleasant person': git. It also stands for Global Information Tracker, and it does just that – track information between several local computers/networks using a global repository.*
4. *If you want a more in-depth exploration of terminal, console, command line, and shell, refer to the link below:*
   https://askubuntu.com/questions/506510/what-is-the-difference-between-terminal-console-shell-and-command-line